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TO: EXAMINER _____ Dennis Rosario-Vasquez

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ART UNIT _____ 2621

SERIAL NO. _____ 09/880,207

FROM: _____ Edward W. Goodman

REGISTRATION NO. _____ 28,613

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Enclosed: R116 Response + Cover

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Edward W. Goodman

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

WILHELMUS H.A. BRULS ET AL.

Serial No.: 09/880,207

Filed: June 13, 2001

Title: NOISE FILTERING AN IMAGE SEQUENCE

Atty. Docket

PHNL 000345

Group Art Unit: 2621

Examiner: D. Rosario

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Enclosed is an amendment in the above-identified application.

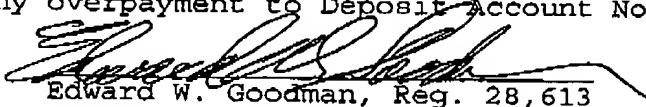[X]   No additional fee is required.

[   ]   The fee has been calculated as shown below.

CLAIMS AS AMENDED				
	Claims remaining after amendment	Highest number previously paid for	Number extra Rate	Additional Fee
Total Claims	16 Minus 20 [1]=		X $50 =	$
Independent Claims	4 Minus 4 [2]=		X $200 =	$
Multiple Dependent Claims, if any. If not previously paid, $360.				$
Total Additional fee for this amendment =				$

[1]If less than 20, enter 20. [2]If less than 3, enter 3.

Please charge any fees which may be required, except the issue fee, or credit any overpayment to Deposit Account No. 14-1270.

Edward W. Goodman, Reg. 28,613
914-333-9611

MAR 0 3 2005

FAX

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of   Atty. Docket

WILHELMUS H.A. BRULS ET AL.   PHNL 000345

SERIAL NO.: 09/880,207   GROUP ART UNIT: 2621

FILED: June 13, 2001   EXAMINER: D. Rosario

NOISE FILTERING AN IMAGE SEQUENCE

Commissioner for Patents
P.O. Box 1450
Alexandria, VA   22313-1450

Sir:

RESPONSE UNDER 37 C.F.R. 1.116

This is in response to the Office Action mailed February
7, 2005, in which the Examiner finally rejected claims 1-3, 5-13
and 15 under 35 U.S.C. 102(b) as being anticipated by U.S. Patent
5,467,380 to De Jonge et al.; claim 4 under 35 U.S.C. 103(a) as
being unpatentable over De Jonge et al. in view of U.S. Patent
5,486,863 to Auyeung et al.; and claims 14 and 16 under 35 U.S.C.
103(a) as being unpatentable over U.S. Patent 5,055,927 to Kessen
et al. in view of De Jonge et al.

Applicants traverse the above rejections and offer the
following explanations.

Applicants first object to the finality of the current
Office Action. According to the Examiner, in the Office Action at
paragraph 10 on page 13, "All claims are drawn to the same

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invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry under 37 CFR 1.114. Accordingly, THIS ACTION IS MADE FINAL even though it is a first action after the filing of a request for continued examination and the submission under 37 CFR 1.114. See MPEP § 706.07(b)."

The above quotation appears to be from the first paragraph of 706.07(b). However, Applicants would like to draw the Examiner's attention to the third paragraph:

> "However, it would not be proper to make final a first Office action in a continuing or substitute application where that application contains material which was presented in the earlier application after final rejection or closing of prosecution but was denied entry because (A) **new issues were raised that required further consideration and/or search,** or (B) the issue of new matter was raised." (emphasis added).

Now, referring to the Advisory Action mailed November 30, 2004, the Examiner specifically checked the box 2 "The proposed amendment(s) will not be entered because:" and the box (a) "they raise new issues that would require further consideration and/or search (see NOTE below);". Further, on page 3 of the Detailed Action accompanying the Advisory Action, the Examiner explicitly states at paragraph 5 "The proposed amendment raises new issues that would require further consideration and/or search."

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Hence, the finality of the rejections as set forth in the current Office Action is improper, and Applicants respectfully request that the finality be withdrawn.

The De Jonge et al. patent discloses an X-ray examination apparatus and means for noise reduction for use in an X-ray examination apparatus, which includes means for averaging a time sequence and means for spatially averaging.

The subject invention, as claimed in, for example, claim 1, includes "determining (11) statistics from a spatial spread of a set of original pixel values (P_t, M_i) in at least one image of the image sequence (V1)" (claim 15 is an apparatus claim having the same limitations as claim 1).

It has been well founded that "A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987).

In the current Office Action, the Examiner states:

> "However, De Jonge does teach the above limitation of "determining (11) statistics (fig. 1 num. 51 determines "statistical" features from col. 6, line 45 to col. 7, line 9.) from a spatial spread (Spread according to the specification in page 2, lines 9-12 is a difference as shown in figure 1, num. 14 of De Jonge and the spread/difference is inputted to numeral 51 of De Jonge which determines statistical features.) of a set of original pixel values (Pt, Mi) (In De Jonge, a spread/difference is obtained from original pixel values I1 of figure 1.), because the words statistics,

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difference and spread are used interchangeably based on the specification in page 8, line 27. More specifically, on page 2, lines 7 and 8 of the specification states, "the statistics include a … spread …"; and on page 2, lines 9 and 10 of the specification states, "The spread is a measure based on differences…" Thus, the words spread and difference mean the same and the spread/difference determines a statistic and, based on page 8, line 27, statistics and spread have the same meaning, thus statistics, spread and difference can be used interchangeably."

First, the Examiner's analysis finding that the terms "statistics", "spread" and "difference" can be used interchangeably is incredible! This is a good example of how one can change the meaning by merely taking things out of context. The portion of the subject specification referenced by the Examiner, i.e., page 2, lines 7-14, states:

> "Advantageously, the statistics include a spatial and/ or temporal spread of the set of original pixel values. In this embodiment, the adaptation is based on the computation of a 'spread' of the pixel values that are processed to obtain a filtered pixel value. The spread is a measure based on differences between pixel values, the spread being preferably computed as a sum of absolute differences, a given absolute difference being obtained by subtracting an average pixel value from a given original pixel value. The local 'spread', i.e. the spread of the set of original pixels from which a filtered pixel value is calculated, is a good indicator of the local activity of the image."

It should be clear that while the statistics include a spatial and/or temporal spread, the terms "statistics" and "spread" are not interchangeable, and that while the spread is a measure based on differences, the terms "spread" and "difference" are not interchangeable!

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Second, the claim element states "determining statistics from a spatial spread of a set of original pixel values (P_t, M_i) in at least one image of the image sequence". Applicants submit that this is neither shown nor suggested by De Jonge et al. In particular, the Examiner points to subtractor 14 in Fig. 1 of De Jonge et al. as showing a difference for forming the spread which is then input to element 51 which determines statistics. However, the subtractor 14 forms the difference between corresponding pixels in successive images to determine motion. This is a temporal difference. Hence the spread of these differences over a group of pixels is a temporal spread. This is in contrast to the subject invention which determines statistics of a spatial spread.

As shown in Fig. 2, and described in the specification on page 5, lines 16-20, "These input samples may also be used in shows a preferred example of input samples within one field. Dotted lines indicate image lines of a first field and continuous lines indicate image lines of a second field of a frame. A sample P1 is at a position of a calculated output sample. To calculate one filtered luminance sample, five samples Pt, M1, M2, M3 and M4 are used." Now, on page 7, lines 20-23, equations (4) and (5) show how the spatial spread is determined using the five input samples. It should be clear that this spatial spread concerns pixel samples occurring in the same image as opposed to a spread of differences

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of corresponding pixels in successive frames which is disclosed in
De Jonge et al.

Applicants therefore stress that De Jonge et al. neither
shows nor suggests "determining statistics from a spatial spread of
a set of original pixel values (P_t, M_i) in at least one image of the
image sequence".

Since claims 2, 3, 5-13 depend directly from claim 1,
Applicants submit that along with claim 1, these claims are also
allowable.

The Auyeung et al. patent discloses a method for
determining whether to intra code a video block, which teaches:

> "Another method for determining whether to intra code
> or non-intra code is to calculate for each pixel in the
> current block, the absolute value of the difference
> between the average pixel value and each pixel value in
> the current block and then sum the values. This sum is
> referred to as the sum of absolute differences (SOAD)
> for the current block. Similarly, the sum of the
> absolute values of the difference between each pixel in
> the matching block and each pixel in the current block
> is calculated. This sum is referred to as the sum of
> absolute differences (SOAD) for the difference block.
> If the SOAD for the difference block is less than or
> equal to a certain threshold, non-intra coding is
> chosen. Otherwise, if the SOAD for the difference block
> is greater than the threshold and greater than the SOAD
> for the current block, then intra coding is chosen."
> (col. 2, lines 10-24).

While this arguably corresponds to the limitation in claim 4,
Applicants submit that there is no reason for combining Auyeung et
al. with De Jonge et al.

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Applicants remind the Examiner of the contents of MPEP 2143.01, which in part states:

"Obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000).

Applicants submit that there is no teaching, suggestion, or motivation to combine Auyeung et al. with De Jonge et al. In particular, De Jonge et al. is concerned with the (temporal) spread of differences of corresponding pixels in a block in successive images. There is no disclosure in De Jonge et al. of any concern with "determining statistics from a spatial spread of a set of original pixel values (P_t, M_i) in at least one image of the image sequence". Hence, there is no incentive for one to combine the teaching of Auyeung et al. with those of De Jonge et al.

The Kessen et al. patent discloses a dual channel video signal transmission system in which an HDTV signal is encoded onto two channels, transmitted, and then the received 2-channel signals

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are recombined in a combiner and filter 9 to reform the HDTV signal.

The Examiner now states "Kessen et al. teaches a method of encoding (1) an image sequence (V1), comprising the steps of: a) encoding (Fig. 1, num. 2 and 6 receive images) a plurality of filtered images (Fig. 1 "HDTV" on the left and right ends are the same) Note that HDTV of fig. 1 is produced from a filter 9 of fig. 1. Therefore, the HDTV on the left end of fig. 1 was filtered by filter 9."

This statement by the Examiner is ridiculous! Clearly, the elements to the left of the vertical dashed line are at a transmitter which receives an HDTV signal for transmission, while the elements to the right of the vertical dashed line are at a receiver which receives the two channels transmitted by the transmitter, and combines the received signals in the combiner and filter 9 to reformulate the HDTV signal.

Notwithstanding the above, the transcoder 1 of Fig. 1 in Kessen et al. dies include a horizontal transcoder filter 9 and a vertical transcoder filter 10, and the output from the transcoder 1 is applied to a TV encoder 2. As such, Kessen et al. arguably does show encoding a plurality of filtered images.

However, as previously explained with reference to claim 1, De Jonge et al. neither shows nor suggests the filter steps as claimed in claims 14 and 16.

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In view of the above, Applicants believe that the subject invention, as claimed, is neither anticipated nor rendered obvious by the prior art, either individually or collectively, and as such, is patentable thereover.

Applicants believe that this application, containing claims 1-16, is now in condition for allowance and such action is respectfully requested.

Respectfully submitted,

by Edward W. Goodman, Reg. 28,613
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